Bringing LEAN to LIFE

Software tools allow winning winery to continue improving efficiency.

By Hallie Forcinio

Ste. Michelle Wine Estates of Woodinville, Wash., may have won *Packaging Machinery Technology*'s 2008 Packaging Line of the Year award for the line at its Columbia Crest Winery in Paterson, Wash., but the winery's work is far from over. Since its win, the winery has made continuous improvements using lean and Six Sigma practices.

"We have a Six Sigma initiative to reduce scrap loss," says Blair North, operations manager. "It's made such a positive impact we've been able to reduce the amount of raw materials we order. When you reduce scrap, you don't have to have materials on hand to cover losses," he explains.

"We've also improved uptime," he reports. "This was done by tracking minor stops. This information helped us identify and correct some problems we hadn't necessarily been aware of because our accumulation system had compensated enough to prevent filler downtime."

The winery uses TrakSYS performance management and decision support software from Parsec Automation Corp. of Brea, Calif., to capture overall equipment effectiveness (OEE) data and Six Sigma tools to measure scrap. The TrakSYS software provides packaging machine performance data in real time. It's accessible from terminals in various areas including maintenance. Information also can be called up on any work station connected to the company's intranet.

Daily meetings of representatives from production, maintenance, warehouse and winemaking review downtime and any other issues. The group puts together corrective action plans with short-term action items like a quality issue with a packaging material that is causing disruptions on the line. It also establishes long-term action items such as total cost of ownership strategies for each piece of equipment that identify the optimum points for rebuilding and/or replacement.

Future plans involve implementing 5S initiatives on the packaging line to reduce changeover time. "As we order new equipment, we specify automated changeover or toolless changeover with quick-change parts," says North. "We also are looking at ways to improve the way we use the TrakSYS product and plan to do some configuring to become more interactive with the shop floor. In fact, we're getting ready to upgrade to TrakSYS Version 7.0, which will provide tools for improved dashboards and other reports that will help us."

CAPTURING AND ANALYZING DATA

TrakSYS software can capture and analyze information that is difficult or impossible to collect manually from the packaging line. "It brings new perspective," says Eddy Azad, president of Parsec Automation. "It provides information in real time so problems can be ▶

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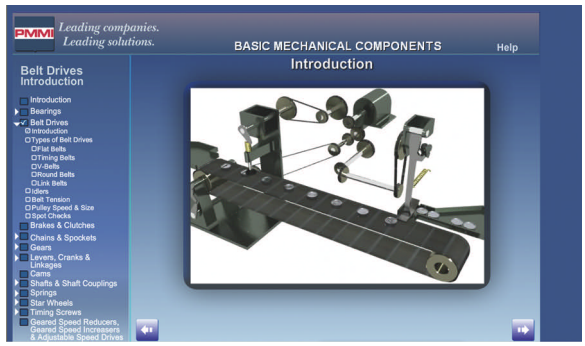

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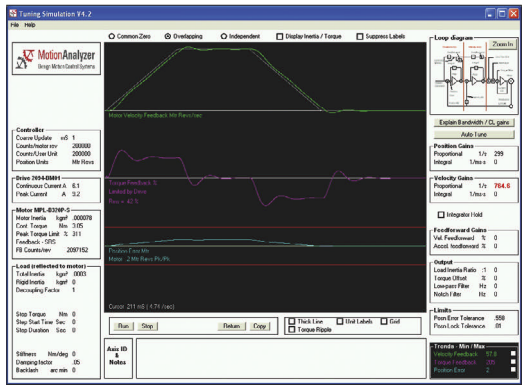
fixed right away, thereby preventing or reducing the duration of undesirable events."

Since the software analyzes multiple factors that affect outcomes, it also can be used to set benchmarks and establish best practices. For example, if the data shows the third-shift team on Line 2 consistently achieves a 20 percent better yield when running Product A, those best practices can be adopted by every team running Product A. Making the third shift team's practices standard and teaching the other teams "generates benefits very quickly," says Azad.



Rockwell's Motion Analyzer software balances the cost, performance and energy use of motors, drives and gearboxes in order to optimize the configuration of a packaging machine.

Another function of the software is to identify variability in performance and perform a root cause analysis. For example, if the analysis shows Item A causes 50 percent of the variability, Item B is responsible for 30 percent and multiple factors account for the remaining 20 percent, attention can be focused on reducing or eliminating the major offenders. "The cause is not always machine related," notes Azad. In fact, many root causes don't have anything to do directly with the machine, but are related to irregularities in packaging materials, training gaps or other lapses.

The interactive software also can present personalized views for various job functions such as operators, supervisors, maintenance personnel and production schedulers. Plus, it tracks actions so stakeholders can see how a problem was fixed. "Tracking actions and results closes the loop," says Azad, noting consistently better performance depends on repeatability.

Eliminating waste and downtime on the packaging line starts with the design phase. Considering the total cost to design, develop and deliver a piece of equipment, a concept referred to by Rockwell Automation of Milwaukee, Wis., as TCD3, can help machine builders optimize their operations and machine performance.

Motion Analyzer, a software tool from

Rockwell Automation, works in conjunction with three-dimensional computer-aided design software from Dassault Systèmes SolidWorks Corp. of Concord, Mass., to balance the cost, performance and energy use of motors, drives and gearboxes in order to optimize the configuration of the packaging machine.

Yet another timesaver, Modular Programming from Rockwell Automation, reduces engineering and programming time by making it possible to reuse code. It also fosters interoperability with other equipment and systems and is particularly powerful when layered with PackML (Packaging Machine Language), which standardizes machine state names and definitions as well as terminology for types of lines and data elements like total run time. It was adopted as part of the ISA88 industry standard in August 2008.

ROLE OF ROBOTS

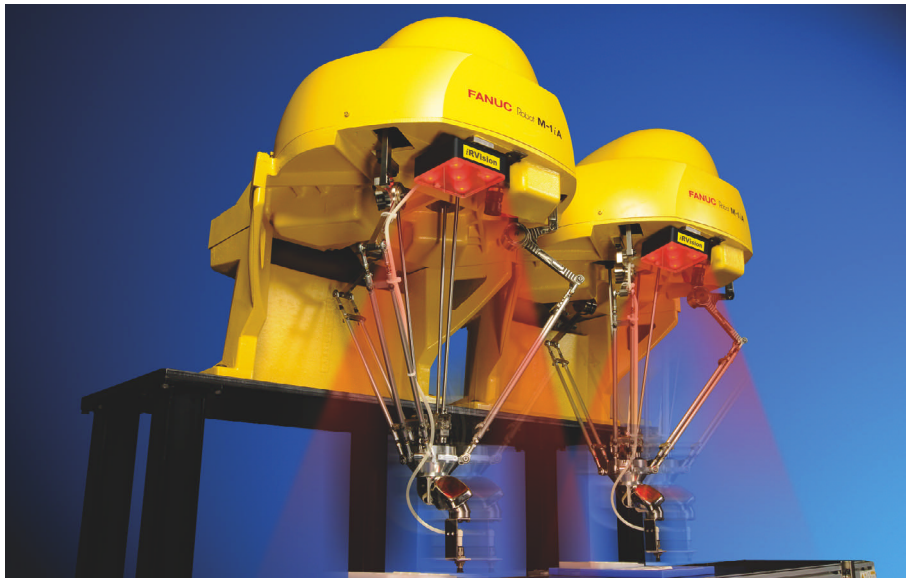
Finally, when practicing lean, safety and sustainability also must be considered. "When you think lean, it's not a single process," says Leo Petrokonis, packaging business development manager at Rockwell Automation. "These three interact and tie into one another."

Robots, especially vision-equipped robots, also support a lean packaging line. "Lean is all about eliminating waste," says Dick Motley, an account manager at FANUC Robotics America, Inc. of Rochester Hills, Mich., who works with partners that integrate robots for packaging applications. "Vision technology that performs 100 percent inspection identifies defects as soon as they occur rather than sending flawed product down the value stream," he explains.

In addition, when robotic systems are compared to conventional packaging machines, total cost of ownership often favors the robotic system due to labor savings, shorter changeover time, fewer change parts and relatively easy redeployment as needs change. "Reducing change parts and the time associated with them is an area where robotics can make a big contribution," says Motley. However, "it's essential to make sure every stakeholder has an understanding of the benefits in terms they understand," he adds. This means providing total cost of ownership statistics to financial people, uptime data to operations personnel and demonstrating to operators that the equipment is basically a packaging machine with a robot on board. With today's software technology and integration capabilities, the robot-equipped machine "looks, feels

and behaves a lot like any other packaging machine. Nobody needs to be a robotic programmer to run a robot," says Motley.

A robotic case-packing system from Schneider Packaging Equipment Co., Inc. of Brewerton, N.Y., serves as a good example. Although a conventional case packer from Schneider could handle a broad range of package sizes, configurations and shapes, its successor, based on a FANUC robot, proved superior in every metric. It not only required less lead time, but also offers greater product handling flexibility, consumes less energy, contains fewer moving parts and experiences less downtime.



An integrated iRVision 2D system on FANUC's high-speed M1iA parallel-link robot works at line speeds to ensure fault-free packs.

Another robotic system that is used in different beverage facilities—a FANUC robot-equipped palletizer from Hartness International, Inc. of Greenville, S.C.—gently handles lightweighted beverage bottles housed in a source-reduced all-film multipack. "The thin bottles and flexible packaging were being destroyed by conventional palletizing," explains Motley. With the robotic system, one robot moves with the product, tracks its speed and location and gently guides it into a layer pattern so the second robot can pick up the load and stack it.

In the end, however, lean is not a tools-driven philosophy; it's people-driven. "Technology must be looked at as an enabler—not the solution by itself," says Azad. "Even with the best technology at your disposal, it is the commitment to using your tools in the context of improvement that will deliver the sought-after results."

"It really comes down to a commitment to improving and empowerment," agrees Scott Watson, senior consultant at E2M, Inc. of Duluth, Ga. Practicing lean requires a culture change with two equally important components.

First, "leadership in the plant and the company at large must be committed to doing things differently and better. If empowerment from that level is lacking, it's difficult to make any change stick," Watson explains. Without top-down buy-in, it's also almost impossible to put in place the changes needed to eliminate constraints that cross departmental or functional lines.

Second, the methods for achieving improvements have to come from the bottom up. "The person that has the power to enforce the change can't also dictate what the change will be because it stifles improvements that could be achieved," says Watson. If packaging line personnel do not feel empowered to make changes, they don't see themselves as stakeholders. "They are just following orders," explains Azad.

"If these two components are in place, [the top-down commitment and bottom-up generation of ideas], an easier, faster process and higher quality will follow," Watson concludes. PMT

Hallie Forcinio has been covering packaging industry trends for more than 20 years.

LEAN INITIATIVES SUCCEED WHEN . . .

- All levels of the organization buy into the philosophy
- Leadership comes from the top
- Ideas come from packaging line personnel
- There's a commitment at all levels to system-wide, continuous improvement
- Specific goals are set
- Expectations are clear and reasonable
- Tools and information are used to make continuous improvements
- Everyone understands results don't happen overnight
- Failures are embraced as a learning experience
- Successes are celebrated and built on
- Unnecessary complexity is avoided
- Stakeholders possess the necessary tools and training